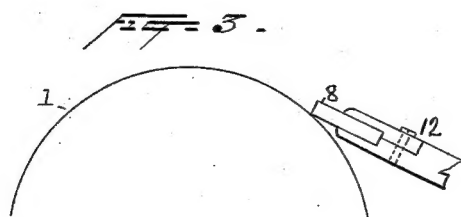
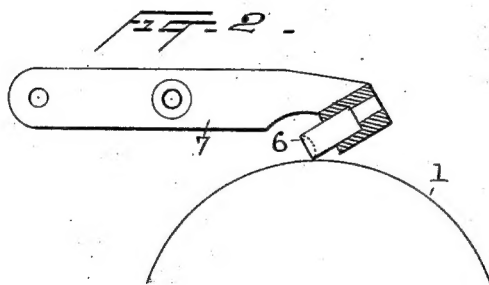
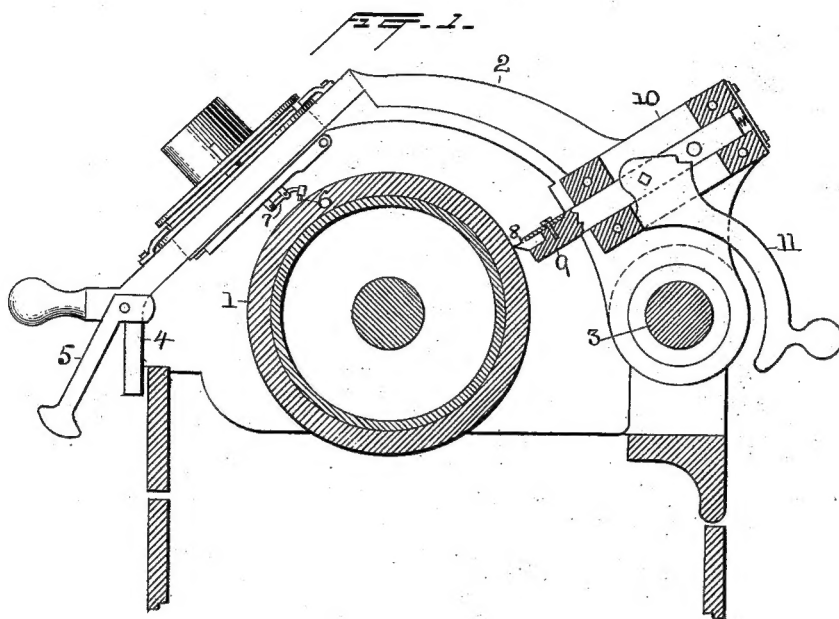


(No Model.)

T. A. EDISON.  
PHONOGRAPH CUTTING TOOL.

No. 484,583.

Patented Oct. 18, 1892.



Witnesses  
Morris A. Clark.  
Charles M. Catlin.

Inventor  
T. A. Edison.  
By his Attorneys  
Lyert Seely.

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

## PHONOGRAPH CUTTING-TOOL.

SPECIFICATION forming part of Letters Patent No. 484,583, dated October 18, 1892.

Application filed May 27, 1890. Renewed March 30, 1892. Serial No. 427,012. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Phonograph Cutting-Tools, (Case No. 861,) of which the following is a specification.

In practice it is found that after phonographs have been in use for a time the articulation of the speech reproduced is not so smooth and clear as when the phonograph was first put in use. While the articulation is sufficiently good to be intelligible, the false or extraneous vibrations are such as to cause unpleasant and sometimes confusing noises at the reproducer. I attribute this to the fact that by continued use the cutting-edge of the recorder and of the turning-off tool and the bearing point or end of the reproducer become roughened and this causes false marks to be made on the phonogram-blank. The recording-surface of the phonogram-blank is ordinarily of wax or a stearate or hard metallic soap or other wax-like material or composition, and it would naturally be supposed that a tool of steel of the best quality would be entirely satisfactory for use in connection with such a comparatively-soft substance. I have, however, found that such tools are subject to the objection above set forth. This is due to the chemical action of acids or other substances found in the wax-like material or composition of which the phonogram-blank is made and to the dulling and roughening action of fine particles of silica or other hard material which become mixed with the wax-like material during the manufacture of the blank or which become lodged on the surface thereof. After many trials I have found that a sapphire or other similar jewel co-operates in the most effective manner with the wax-like phonogram-blank, since the acids thereof do not attack these substances, they are not rusted by moisture, and they are adapted to withstand the dulling action of the hard particles referred to.

The present invention consists in a cutting-tool (which may be either the recording-point or the turning-off tool) for a phonograph of a jewel or similar substance which will withstand the corroding action of acid and in cer-

tain combinations which will be hereinafter described and claimed.

The reproducer is not claimed herein, since it forms the subject of another application filed on even date herewith.

In the accompanying drawings, which illustrate the invention, Figure 1 is a side view, partly in section, of a phonograph of well-known form with the improved cutting-tools attached. Fig. 2 shows the recorder on a larger scale, and Fig. 3 is a view of a turning-off tool of slightly-different shape from that illustrated in Fig. 1.

1 is the wax-like phonogram-blank, mounted on a cylinder in the ordinary manner.

2 is the arm carrying the recorder and sleeved onto the guide-rod 3 and movable thereon.

4 is the guide-rest, on the upper edge of which the recorder-frame bears and along which it slides.

5 is a cam-lever for raising the frame and thereby removing the recorder from the surface of the blank.

6 is the recorder, preferably of sapphire, as above described. In the form shown the recorder is in the shape of a cylinder, the outer end being hollowed out, thus leaving a curved sharp edge for cutting the surface of the blank. This particular form does not constitute a part of the present invention, since it is claimed in my application, Serial No. 306,670, dated April 10, 1889. This cutting-tool is mounted in a socket or sleeve at one end of the pivoted lever 7, the opposite end of which is connected to the phonograph-diaphragm.

8 is a cutting-tool, which is technically termed the "turning-off" tool, and which is used for removing a previous record and for giving a smooth and even surface to the blank on which to impress a new record. This tool is also made of sapphire or of quartz, agate, or similar hard material not readily affected by the acids. In the construction shown it is clamped to the carrier 9, which is movable in the holder 10, and 11 is a handle for moving the cutting-tool onto or off from the surface of the blank.

I have found that a turning-off tool which does not have a sharp cutting-edge, but has such edge ground away to form a right angle or approximately a right angle, so that the

edge will not enter beneath the surface of the material, can be used to advantage. As such an edge cuts the material, it breaks it above the cutting-edge, so that the chips do not  
5 carry with them any portion of the blank below the line of cutting. This form of turning-off tool is illustrated in Fig. 3, where 8 is the sapphire cutting-tool supported in the clamp 12. This tool is supported, as indicated,  
10 so as to present its cutting-edge obliquely to the surface of the phonogram-blank.

Having thus described my invention, what I claim is—

1. In a phonograph employing phonogram-  
15 blanks of wax-like material, and in combination with a holder for such blanks, a jewel

cutting-tool situated with relation to said holder, so as to operate upon the blank held thereby, substantially as set forth.

2. The combination, in a phonograph, with  
20 a phonogram-blank of comparatively-soft material, of a jewel recorder, substantially as described.

3. The combination, in a phonograph, with  
25 a phonogram-blank of a wax-like material, of a sapphire recorder, substantially as set forth.

This specification signed and witnessed this  
24th day of May, 1890.

THOS. A. EDISON.

Witnesses:

A. O. TATE,  
THOMAS MAGUIRE.